

REMARKS

This paper is being provided in response to the November 20, 2002 Final Office Action for the above-referenced application. In this response, Applicants have added new Claim 14, amended Claims 1-8 and 11-12 in order to clarify that which Applicant deems to be the invention. Applicants respectfully submit that newly added Claim 14 and the modifications to the claims are supported by the originally-filed application.

The rejection of Claims 1-13 under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art (fig.8, hereinafter referred to as “APA”) in view of the Japanese Patent Application No. H5-75313 (hereinafter referred to as the “313 reference”) is hereby traversed and reconsideration thereof is respectfully requested. Applicants respectfully submit that claims 1-13, as amended herein, are patentable over the references, taken separately or in combination.

Applicants’ Claim 1, as amended herein, recites an RF package including a multilayered dielectric substrate on which first and second dielectric substrates are formed. The multilayered dielectric substrate has a cavity in the second dielectric substrate where a semiconductor element is to be mounted on the first dielectric substrate. A feed-through exists for connecting an inside and outside of the cavity and is comprised of a coplanar line formed on the first dielectric substrate and an inner layer line formed on the first dielectric substrate obtained by forming the second dielectric substrate on the coplanar line. The coplanar line and the inner layer line share a signal conductor formed on the first dielectric substrate. Metal members are formed at a connection interface between the coplanar line and the inner layer line on two sides of the signal conductor, and connect ground conductors of the coplanar line and the inner layer line on the

first dielectric substrate to a top surface of the second dielectric substrate at an edge of the second dielectric. A plurality of first via holes is formed in the first dielectric substrate and a plurality of second via holes is formed in the second dielectric substrate. Claims 2-13 depend from Claim 1.

The APA discloses an RF package having two ceramic layers with a cavity that penetrates the top layer. There is a coplanar line with a signal line that extends under the top ceramic layer to the outside of the cavity. There are vias that connect the top ground layer to the coplanar lines.

The '313 reference discloses a hybrid integrated circuit device in which a coplanar line used to connect the semiconductor element 9 installed in the cavity of the second dielectric substrate 3 to the outside is provided in the first dielectric substrate 2, and through holes are provided in the end faces. (See translation submitted with Applicants' '313 reference).

Applicant respectfully submit that Claim 1, as amended herein, is neither disclosed nor suggested by the references, taken separately or in combination, in that the references neither disclose nor suggest *an RF package comprising: a feed-through for connecting an inside and outside of said cavity and comprised of a coplanar line formed on said first dielectric substrate and an inner layer line formed on the first dielectric substrate obtained by forming said second dielectric substrate on said coplanar line, said coplanar line and said inner layer line sharing a signal conductor formed on the first dielectric substrate; metal members formed at a connection interface between said coplanar line and said inner layer line on two sides of said signal conductor, and connecting ground conductors of the coplanar line and the inner layer*

line on the first dielectric substrate to a top surface of the second dielectric substrate at an edge of the second dielectric; and a plurality of first via holes formed in said first dielectric substrate and a plurality of second via holes formed in said second dielectric substrate , as set forth in Applicants' amended Claim 1.

Applicants' claimed invention provides a high frequency package having a feed-through constitution that can be easily manufactured without deteriorating a transmission characteristic at a high frequency in a ceramic package in which the feed-through has the problem described, for example, in Applicants' Background section at page 2, line 10-page 3, line 7. A feature of the present invention is made also to have the "metal member (electrode) which is formed on two sides of the signal conductor of the line in the connection interface between the coplanar line and the inner layer".

The APA discloses forming through holes in the dielectric substrate layer, but neither discloses nor suggests forming any type of element at a connection interface, as set forth in Applicants' amended Claim 1.

Since the hybrid integrated circuit device as described in the '313 reference relates to a microwave strip line, the present invention including the coplanar line is completely different from the '313 reference. A microwave strip line, as in the '313 reference, is based on the principle which makes the signals propagate by the electromagnetic field concentrated between the ground conductor layer on one side and the strip conductor on the other side. In contrast, a coplanar line, as in Applicants' claimed invention, makes the signals propagate by the electromagnetic field concentrated between the strip conductor on one side of a substrate and the

ground conductor on the same side which are disposed closely to the two sides of the strip conductor. Therefore, the '313 reference and Applicants' claimed invention are entirely different from one another in terms of the essential constitution and principle of operation of the respective transmission lines.

Additionally, judging from the constitution as shown, for example, in Figure 2 of the '313 reference, the metallized layers 5a and 5b are formed on the two sides of the microwave strip lines 7a and 7b in the hybrid integrated circuit device. These metallized layers 5a and 5b are only the conductors for the wiring between the semiconductor devices 9 and the ground, as can be seen from the point that the metallized layers have the constitution to be arranged greatly apart from the two sides of the microwave strip lines 7a and 7b, and from the point that the thin metal lines 8 are wired between the semiconductor devices 9 and the metallized layers 5a and 5b which are extended near to the semiconductor devices 9 mounted in the cavity.

Additionally, the hybrid circuit device of the '313 reference neither discloses nor suggests a high frequency package formed with the feed-through which is made up of the coplanar line on the first dielectric layer and the inner layer line on which the second dielectric layer is laminated on the coplanar line in order to connect the inside and outside of the cavity that includes the coplanar line, as set forth in Applicants' claimed invention.

Accordingly, the references, whether taken alone or in any combination, neither disclose, teach or suggest the *an RF package comprising: a feed-through for connecting an inside and outside of said cavity and comprised of a coplanar line formed on said first dielectric substrate and an inner layer line formed on the first dielectric substrate obtained by forming said second*

dielectric substrate on said coplanar line, said coplanar line and said inner layer line sharing a signal conductor formed on the first dielectric substrate; metal members formed at a connection interface between said coplanar line and said inner layer line on two sides of said signal conductor, and connecting ground conductors of the coplanar line and the inner layer line on the first dielectric substrate to a top surface of the second dielectric substrate at an edge of the second dielectric; and a plurality of first via holes formed in said first dielectric substrate and a plurality of second via holes formed in said second dielectric substrate , as set forth in Applicants' amended Claim 1.

Applicants' dependent Claims 2-13 are also neither disclosed nor suggested by the references, taken separately, or in combination, for at least the same reasons as Claim 1. In particular, the references also neither disclose nor suggest the feature of "... said metal members are semi-cylindrical metal electrodes having an edge at said connection interface which does not extend beyond said connection interface", as set forth in amended Claim 11, or the feature of "... said metal members are metal plates projecting from a side of said second dielectric substrate extending beyond said connection interface in a direction toward said coplanar line", as set forth in amended Claim 12.

In view of the foregoing, Applicants respectfully submits that Claims 1-13, as amended herein, are patentable over the references and request that the Examiner reconsider and withdraw the rejection.

Applicants respectfully submit that the newly added Claim 14 is also patentable over the cited references.

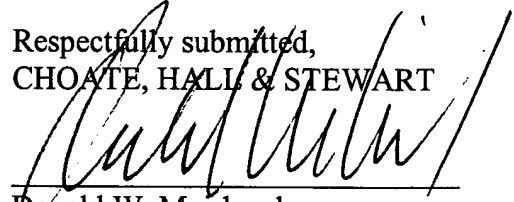
Based on the above, Applicant respectfully requests that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 617-248-4038.

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Date

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